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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/723,921      | 11/26/2003  | Michael D. Geron     | IR 3605 DIV         | 9780             |

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ARKEMA INC.  
PATENT DEPARTMENT - 26TH FLOOR  
2000 MARKET STREET  
PHILADELPHIA, PA 19103-3222

EXAMINER

WEBB, GREGORY E

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1751

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/723,921 | <b>Applicant(s)</b><br>GERNON ET AL. |  |
|                              | <b>Examiner</b><br>Gregory E. Webb   | <b>Art Unit</b><br>1751              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-20 and 22 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0104</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 3, 4, 7, 8, 9, 10, 15, 16, and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Martyak (US6585812).

Concerning the dithionic acid and the sulfuric acid, Martyak teaches the following:

The pH of the bath may be anywhere from 0 to about 4.0, or from about 1.2 to about 3.2 and especially from about 1.5 to about 2.2. Acids such as

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sulfur acids may be added to the bath in order to adjust the pH. These acids are well known in the art and include inter alia 1-10 carbon atom aliphatic or cyclic organic acids, the halogen acids, phosphorous acids or preferably sulfur acids where zinc sulfate is used. These acids include sulfuric, sulfurous, oleum, thiosulfuric, dithionous, metasulfuric, dithionic, pyrosulfuric, or persulfuric acid and the like as well as mixtures thereof and especially the two component or three component mixtures. Sulfuric acid is preferred because of its commercial availability.(see col. 5, lines 10-22)

Concerning the ferrous, Martyak teaches the following:

The ASTM specification for zinc deposits on ferrous metals call for thicknesses of from about 5 to about 25 .mu.m, depending on the severity of the expected service.(see col. 1, lines 45-52)

Concerning the metal substrate, Martyak teaches the following:

The electrogalvanizing process is carried out under conditions and in the manner heretofore described for coating a metal substrate and especially a steel substrate by passing a current from an anode known in the art such as iridium oxide coated titanium anodes or a zinc anode immersed in the electrogalvanic coating bath to a metal cathode in the bath for a period of time sufficient to deposit a zinc coating on the cathode.(see col. 5, lines 25-35)

Concerning the electroplating, Martyak teaches the following:

High current density zinc sulfate electrogalvanizing process and

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composition(see title)

Concerning the immersion plating, Martyak teaches the following:

Typical plating tanks employed in these processes contain anywhere from about 5,000 to about 300,000 gallons and can be employed for plating either zinc or a zinc alloy such as a zinc-nickel alloy. These are continuous plating baths which will accommodate steel rolls about 8 feet in diameter at speeds of anywhere from about 200 to about 850 feet per minute with varying coating weights of from about 20 to about 80 grams/m.sup.2 and coating thicknesses from about 6 to about 10 .mu.m. The solution flow rate is approximately 0.5-5 m/sec.(see col. 1, lines 55-65)

Claims 1, 2, 3, 4, 7, 8, 9, 10, 15, 16, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Martyak (US5718818).

Concerning the dithionic acid and the sulfuric acid, Martyak teaches the following:

The pH of the bath may be anywhere from about 1.2 to about 3.2 and especially from about 1.5 to about 2.2. Sulfur acids may be added to the bath in order to adjust the pH. These acids are well known in the art and include inter alia sulfuric, sulfurous, oleum, thiosulfuric, dithionous, metasulfuric, dithionic, pyrosulfuric, or persulfuric acid and the like as well as mixtures thereof and especially the two component or three component mixtures. Sulfuric acid is preferred because of its commercial

availability.(see col. 4, lines 38-47)

Concerning the ferrous, Martyak teaches the following:

Zinc corrosion resistant coatings which are applied electrolytically on ferrous metals such as steel are used extensively in industries where corrosion resistance is required, such as in the automotive industry.(see col. 1, lines 17-22)

Concerning the metal substrate, Martyak teaches the following:

The electrogalvanizing process is carried out under conditions and in the manner heretofore described for coating a metal substrate and especially a steel substrate by passing a current from a zinc anode immersed in the electrogalvanic coating bath to a metal cathode in the bath for a period of time sufficient to deposit a zinc coating on the cathode.(see col. 4, lines 50-60)

Concerning the electroplating and the metal sulfate salt, Martyak teaches the following:

High current density zinc sulfate electrogalvanizing process and composition(see title)

Concerning the immersion plating, Martyak teaches the following:

Typical plating tanks employed in these processes contain anywhere from about 5,000 to about 300,000 gallons and can be employed for plating either zinc or a zinc alloy such as a zinc-nickel alloy. These are continuous plating baths which will accommodate steel rolls about 8 feet in diameter at speeds of anywhere from about 200 to about 850 feet per minute with varying coating weights of from about 20 to about 80 grams/m.<sup>2</sup> and coating thicknesses from about 6 to about 10  $\mu\text{m}$ . The

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solution flow rate is approximately 0.5-5 m/sec.(see col. 1, lines 49-58)

Claims 1, 2, 3, 4, 7, 8, 9, 10, 15, 16, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kogure (US4130431).

Concerning the metal finishing and the rust, Kogure teaches the following:

The present inventor has reached this invention by discovering that a rust preventive paint containing oxytitanic ion or peroxytitanic ion has excellent water resistance, corrosion resistance, mechanical strength, adhesiveness to finishing paint, etc. as a result of repeated earnest study for the purpose of obtaining a rust preventive paint with excellent outdoor weatherability, good adhesiveness to finishing paint and having no effect on weldability and gas cutting property of metal substrate without containing harmful chrome or lead compounds.(see col. 2, lines 13-25)

Concerning the dithionic acid and the sulfuric acid, Kogure teaches the following:

As the acids to be used herein, inorganic acids such as hydrochloric acid, hydrofluoric acid, chloric acid, perchloric acid, sulfuric acid, sulfurous acid, pyrosulfuric acid, nitric acid, nitrous acid, phosphoric acid, pyrophosphoric acid, metaphosphoric acid, etc. can be used.(see col. 2, lines 47-55)

Concerning the metal substrate, Kogure teaches the following:

The metal surface treatment liquids and the rust preventive paints in the foregoing Examples 1 to 7 and Comparative Example 1 to 4 were subjected to

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various tests, the results of which are shown in the Table 1 and Table 2.

With respect to Examples 1 to 3 and Comparative Example 1, the metal surface treatment liquids were applied to various metal substrates by dipping. Then, the coated metal substrates were dried by hot air of 50.degree. and washed with water to form a composite oxide film thereon.

On the other hand, the rust preventive paints of Example 4 to 7 and Comparative Example 2 to 4 were applied to metal substrates by spraying and air-dried.(see col. 8)

Claims 5, 6, 11, 12, 13, 14, 18, 19, 20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kukanskis (US5547559).

Concerning the metal finishing, electroplating, electroplating solution and the immersion plating, Kukanskis teaches the following:

After treatment in the process of this invention the surfaces can optionally be treated in a mild acid solution prior to electroplating.

Following this optional acid treatment the substrate is then electroplated. Electroplating can occur in a variety of electroplating solutions. For a discussion of useful electroplating solutions and processes please see U.S. Pat. No. 3,819,497, the teachings of which are incorporated herein by reference in their entirety. In the case of printed circuit boards, the electroplating solution will most likely be a copper



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electroplating solution, although other metals such as nickel may be employed.(see col. 4, lines 12-22)

Concerning the sulfuric acid and the claimed cleaning process, Kukanskis teaches the following: .

The cleaning and conditioning of the surfaces of the substrate can be accomplished with a variety of cleaner/conditioners known in the art. For a particularly useful cleaning and conditioning cycle see U.S. Pat. No. 4,976,990 the teachings of which are incorporated herein by reference in their entirety. As part of the cleaning/conditioning cycle, it is frequently advantageous to etch the part prior to the actual cleaner/conditioner. For plastic based parts various etchants are useful such as permanganate, chromic acid, and sulfuric acid.(see col. 3, lines 29-38)

Concerning the claimed dithionate salt, Kukanskis teaches the following:

A similar panel was run through the same cycle as in Example I except that 50 gr/l sodium dithionate solution at a pH=10 was used instead of the sodium sulfite solution. No smut formation was observed and similarly good results were achieved.(see example IV)

Concerning the claimed sulfate salt, Kukanskis teaches the following:

A similar panel was run through the same cycle as in Example I, except instead of employing the sodium sulfite solution, the panel was cathodically electrocleaned in a 20 gr/l sodium sulfate solution at pH=9 for 1 minute at 20 A.S.F. and ambient temperature. No smut formation was observed and similarly good results were achieved.(see example II)

***Allowable Subject Matter***

Although the use of dithionic acid and dithionate salt is known in the metal processing industry, the combination of the acid and the salt with other compounds, in particular the sulfate salt, is not well known. The applicant's claims would be most likely be allowable should the independent claims require the inclusion of one additional ingredient. For example, the examiner was not able to find the following features: the use of these compounds in tin plating, and/or the combination of the dithionate and ammonium sulfate. It may also be possible to combine the dithionic in more specific weight percentages in combination with a secondary ingredient.

The remainder of the references not cited above are cited for being considered state-of-the-art in the use of dithionic acid or their salts in metal processing compositions.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325.

The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'G. Webb', with a stylized, looping flourish at the end.

Gregory E. Webb  
Primary Examiner  
Art Unit 1751

gew